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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,814	01/18/2002	Masayoshi Ishibashi		8952

7590

11/14/2003

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EXAMINER

KIM, PETER B

ART UNIT

PAPER NUMBER

2851

DATE MAILED: 11/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/050,814

Applicant(s)

ISHIBASHI ET AL. *IL*

Examiner

Peter B. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24, 26 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24, 26, 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/090,942.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Applicant's arguments filed on Oct. 22, 2003 have been fully considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnett et al. (Arnett) (5,049,461) in view of Kuroda et al. (Kuroda) (5,546,374).

Arnett discloses a method of performing lithography on a substrate using a resist film (10) comprising the following steps: exposing the resist film with electron from a tip (12) by supplying a first bias voltage, which is larger than the second voltage, between the tip and the substrate for portions of the resist film in which latent images are formed (col. 3, lines 33-40) and irradiating the resist film with electrons from the tip by supplying a second bias voltage between the tip and the substrate so as not to form latent images (col. 3, lines 14-31, where 0.7 volts is maintained just to maintain the tip at a desired position). Arnett further discloses a fabrication apparatus comprising an electrically conductive tip, a first holder (19) for holding the tip (19p, 19r), a second holder (17) for holding a substrate (16), a device for supplying exposure current from the tip the resist layer by supplying a voltage between the second holder and the tip, (Fig. 2A), wherein the first holder is deformed by Coulomb force produced by the voltage (col. 3, line 65 – col. 4, line 27) and exposing the resist film with electron from a tip (12) by supplying a first bias voltage, which is larger than the second voltage, between the tip and the substrate for

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portions of the resist film in which latent images are formed (col. 3, lines 33-40) and irradiating the resist film with electrons from the tip by supplying a second bias voltage between the tip and the substrate so as not to form latent images (col. 3, lines 14-31, where 0.7 volts is maintained just to maintain the tip at a desired position). However, Arnett does not disclose the tip making a contact with the film or moving of the substrate along an X-Y surface. Arnett also does not disclose the tips held by a spring. Kuroda discloses in Fig. 1, 2 and 3 the tip making a contact with the film and the moving of the substrate along the X-Y surface (col. 3, line 25-30). Kuroda also discloses applying larger or smaller voltage as required in col. 5, lines 50-67. Kuroda discloses using an elastic member to support the tip (col. 1, lines 45-49). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the method of Kuroda where the tip is held by an elastic member and the tip is made to contact the substrate and moving along the substrate surface to the invention of Arnett in order to prevent breaking of the tip and contaminating of the tip as taught by Kuroda in col. 1, lines 50-67.

Response to Arguments

Applicant argues that Arnett does not use or consider Coulomb force. Although the term is not used by Arnett, Coulomb force is generated between two charged particles, and such force is generated in Arnett.

Applicant also argues that because Arnett teaches maintaining a tunnel distance, it teaches away from having the tip contact the substrate. Both Arnett and claimed invention disclose using a second voltage smaller than a first voltage to maintain a constant distance between the exposure tip and the substrate and using the first voltage to affect exposure of the substrate. Only difference is that the distance is zero in the claimed invention. Both Arnett and

the claimed invention are applying the second voltage to bring the exposure tip and the substrate closer together. If Arnett were teaching an application of the second voltage in order to move the tip further away from the substrate it would teach away from contacting. Since the Coulomb force increases as the distance between the charged particles decrease, it would also be desirable for Arnett to move the tip closer to the substrate, enough to contact the substrate. Thus, it would be obvious to combine Arnett with Kuroda, which teaches such method where the tip is in contact with the substrate.

Applicant also argues that Kuroda and Arnett are directed to different field of invention. Kuroda in col. 1, lines 15-67 and Arnett in col. 1, line 18 – col. 2, line 9, seem to teach that both inventions are in the same field utilizing the principles of STM.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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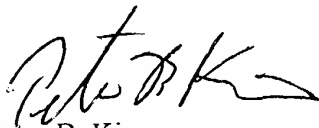
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Kim whose telephone number is (703) 305-0105. The examiner can normally be reached on Monday-Thursday from 8:30 AM to 6:00 PM. The examiner can also be reached on alternate Fridays during the same hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703 308 2847. The fax phone numbers for the organization where this application or proceeding is assigned is 703 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 306- 3431.

A handwritten signature in black ink, appearing to read 'Peter B. Kim', with a stylized flourish at the end.

Peter B. Kim
Patent Examiner
November 7, 2003